(19) Korean Intellectual Property Office (KR)	Publication No. 10-2008-0004025
(12) Public Patent Notification (A)	Publication date 01/09/2008

(71) Applicant

LG Electronics Inc.
20, Yoeuido-dong, Yeongdeungpo-gu, Seoul

(72) Inventors

Yeong-Hyeon Kwon
No. 402, Smile Bill. 103-6 Yuljeon-dong, Jangan-gu, Suwon-si, Gyeonggi-do

Seung-Hi Han
42-35, Yeokchon 1-ding, Eunpyeong-gu, Seoul

(Continued on next page)

(74) Attorney

Yong-In Kim, Chang-Seop Shim

(54) Title of the invention CODE SEQUENCE IN COMMUNICATION SYSTEM, AND METHOD AND DEVICE FOR TRANSMITTING, GENERATING, AND ANALYZING THE SAME

(57) Abstract

The present invention relates to a code sequence for transmitting control information, and more particularly, to the structure of a constant amplitude zero autocorrelation (CAZAC) sequence and a technology to generate and analyze the same. To this end, the present invention proposes a method and device that selects a maximum prime number length equal to or smaller than a required code sequence length when the length of a code sequence required in a communication system is not a prime number, generates a sequence that has the selected maximum prime number length, and inserts a padding portion that has a length corresponding to the difference between the length of the code sequence required in the communication system and the maximum prime number length, and the present invention proposes a code sequence that is generated by the method and device. Since the code sequences generated in this way may increase the number of code sequences that may be generated, without redundancy between them, and maintain good autocorrelation and cross-correlation properties, it is possible to obtain more accurate synchronization information than the related art.

Representative drawing – Fig. 2
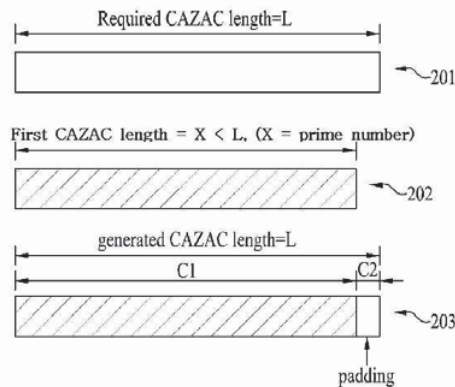
(72) Inventors

Hyun Hwa Park
1133 Sinanmetrocan, 1115 Bisan-dong, Dongangu, Anyang-city, Gyeonggi-do

Dong Chul Kim
401 Daemyungsweetvill, 763 Naeson-dong, Uiwang-city, Gyeonggi-do

Hyun Woo Lee
204 Neovill, 1103-3 Hogye-dong, Dongan-gu, Anyang-city, Gyeonggi-do

Min Seok Noh
211, studio Miraegio 2F, Kuro-3dong, Kuro-gu, Seoul

What is claimed is:

Claim 1

A code sequence having a length required in a communication system to transmit control information, comprising:

a first sequence portion having a prime number length; and

a second sequence portion inserted with a padding portion having a length corresponding with the difference between the required length and the prime number length.

Claim 2

A code sequence having a length required in a communication system to transmit control information, comprising:

a first sequence portion having a prime number length; and

a second and a third sequence, each inserted with a padding portion, and

the sum of the lengths of the second and third sequence portions is equal to the difference between the required length and the prime number length.

Claim 3

The code sequence of claim 1 or claim 2,

wherein the code sequence comprises sequences generated on the basis of a non-primary number length and an overlapping sequence interposed between the sequences.

Claim 4

The code sequence of claim 1 or claim 2,

wherein the prime number length is a maximum prime number length same or smaller than the required length.

Claim 5

A method for transmitting signals comprising the steps of: selecting a code sequence having a length required in a communication system; and

transmitting the selected code sequence to a receiver,

wherein the code sequence comprises:

a first sequence portion having a prime number length; and

a second sequence portion inserted with a padding portion having a length corresponding with the difference between the required length and the prime number length.

Claim 6

A method for transmitting signals comprising the steps of: selecting a code sequence having a length required in a communication system; and

transmitting the selected code sequence to a receiver,

wherein the code sequence comprises:

a first sequence portion having a prime number length; and

a second and a third sequences each inserted with a padding portion,

the sum of the lengths of the second and third sequence portions is equal to the difference between the required length and the prime number length.

Claim 7

An apparatus for transmitting signals comprising: a code sequence selector for selecting a code sequence having a length required in a communication system for transmitting control information; and

a transmitter which transmits the code sequence selected by the sequence selector to a receiver,

wherein the code sequence comprises:

a first sequence portion having a prime number length; and

a second sequence portion inserted with a padding portion having a length corresponding with the difference between the required length and the prime number length.

Claim 8

A method for generating a code sequence for transmitting control information at a transmitting terminal of a communication system, the method comprising the steps of:

selecting a maximum prime number length same of smaller than the length of sequence required in the communication system;

generating a first sequence portion having the maximum prime number length on the basis of the selected maximum prime number length; and

generating a second sequence portion inserted with a padding portion having a length corresponding with the difference between the required length of the sequence and the maximum prime number length.

Claim 9

The method of claim 8,

further comprising a step of inserting a sequence comprised of predetermined constants only in the padding portion.

Claim 10

The method of claim 8,

further comprising a step of inserting a cyclic postfix of the generated sequences in the padding portion.

Claim 11

The method of claim 8, further comprising the steps of:

generating a sequence having the required length, on the basis of the sequence length required in the communication system; and

extracting a sequence having a length corresponding with the difference from the sequence generated to have the required length and inserting it in the padding portion.

Claim 12

The method of claim 8,

further comprising a step of extracting a sequence having a length corresponding with the difference, from the sequences of a different type from the selected sequences generated having a maximum prime number length and inserting in it the padding portion.

Claim 13

The method of claim 8,

splitting and inserting the padding portion in the opposite sides of the first sequence portion for utilizing it as a protective section for sub-band.

Claim 14

The method of claim 13,

inserting any one of a predetermined constant and the cyclic postfix of the sequence generated as described above in the protective section.

Claim 15

The method of any one of claim 8 to claim 14,

DOCKET ALARM

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts

Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research

With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips

Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS
Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS
Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS
Sync your system to PACER to automate legal marketing.

fastcase
Smarter legal research.